REMARKS

Claims 1 and 3 through 26 remain in the application, with claim 1 in independent form. Claim 2 was previously cancelled. No changes to the claims have been made in this Response.

Comments

The Applicants thank the Examiner for his time in discussing the subject invention and application on November 26, 2008 during a telephonic interview. An Interview Summary is being filed concurrently with the instant Response to supplement the Examiner's Interview Summary. While no agreement was reached at the time, Applicant's have subsequently prepared and are submitting herewith a Second[1] Declaration Under 37 CFR § 1.132 to further support the present invention, as claimed, in light of the telephonic interview.

Claim Rejections - 35 USC §103

Claims 1 and 3 through 26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano et al. (U.S. Patent No. 5,229,037; hereinafter "Nakano"). Claims 1 and 3 through 26 also stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano in view of Miyatake et al. (U.S. Patent No. 6,339,127; hereinafter "Miyatake"). Claims 1 and 3 through 26 also stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nakano in view of Enami et al. (U.S. Patent No. 6,380,301; hereinafter "Enami"). Claims 1 and 3 through 26 also stand rejected under 35 U.S.C. §103(a) as being unpatentable over Enami in view of Nakano and further in view of Miyatake.

[1] A Declaration Under 37 CFR § 1.132 was previously filed along with a previous Response originally dated March 10, 2008.

Initially, the Applicants are confused as to why the Examiner has withdrawn prior rejections over Nakano in view of Hamachi et al. (U.S. Patent No. 5,840,831) in the instant Office Action, but then relies on Nakano *by itself*. The Applicants believe that the disclosure and teachings of Nakano were already addressed and distinguished from the claimed invention to the extent that the Examiner had already removed rejections relying in part on Nakano. Regardless, the Applicants respectfully traverse these rejections. Further, to support this traversal, the Applicants again refer to the Second Declaration Under 37 CFR § 1.132, filed herewith. The Declaration has been executed by the second inventor, Kazumi Nakayoshi, who is one highly skilled in the art of silicones including silicone rubber compositions and methods for producing such silicone rubber compositions including, in particular, electrically conductive silicone rubber compositions. While not fully clear from the instant Office Action, the Examiner seems to predominantly rely on an "inherency type" of rationale in his rejections[2].

Considering the clarifying impact of the Declaration, it is clear that the disclosure and teaching of Nakano does not necessarily teach the electrically conductive silicone rubber composition of the present invention as claimed. The same is true for Miyatake and Enami, either alone, or in combination with Nakano. Specifically, the Applicants assert that *even if* the Examiner has established a *prima facie* case of obviousness with regard to the present invention in light of the prior art, the *prima facie* case of obviousness is rebutted by evidence (e.g. the Declaration and Examples in the original application) showing that the prior art products, e.g. Nakano's electroconductive silicone rubber composition, do not necessarily possess the

[2] See, e.g. MPEP §2112.

characteristics of the present invention, as claimed.[3] In addition, the present invention, as claimed, presents new and unexpected results relative to the prior art.[4] Since claim 1 of the subject application was summarized in prior Responses, and in paragraph 4 of the Declaration, its summary will not be repeated here.

Nakano

With regard to Nakano, Nakano can be distinguished from the present invention, as claimed, in many aspects. First, while Nakano discloses the use of a silicon-bonded hydrogen-containing organopolysiloxane (or, alternatively, the use of an organic peroxide) as a curing agent (see C5:L4-6), Nakano is completely silent about a content of the silicon-bonded hydrogen-containing organopolysiloxane used to form its conductive silicone rubber composition, if the silicon-bonded hydrogen-containing organopolysiloxane is even employed at all. Therefore, at a minimum, Nakano fails to teach or suggest component (B) of the present invention in the amounts as claimed for the present invention. In addition, as alluded to above, use of the silicon-bonded hydrogen-containing organopolysiloxane is *optional*, which would lead one of ordinary skill in the art to believe its use is not an important or necessary aspect of Nakano.

While not necessary in view of the argument above, Nakano is further silent about the contents of surfactant in their silicone rubber compositions, if any surfactant is employed at all.

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[3] As the Examiner is aware, a *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. See MPEP §2112.01 and *In re Best*, 562 F.2d at 1255, 195 USPQ at 433 (C.C.P.A. 1977).

[4] See MPEP §2144.05 and *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) *and Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004).

Specifically, as the Examiner has expressly recognized in the instant Office Action, Nakano fails to teach the content of surface active agent in an amount of greater than 0 but not more than 0.3 wt%. *However*, the Examiner then asserts that "it would have been obvious to one of ordinary skill in the art at the time of the invention was made to formulate an electroconductive silicone rubber composition containing silicone elastomer particle having a content of surface active agent with the claimed range, since the general conditions of a claim are suggested by Nakano and discovering the optimum workable ranges (i.e. greater than 0 but not more than 0.3 wt%) involves only routine skill in the art." (emphasis added).

The Applicants respectfully disagree with the Examiner's assertions for the reasons set forth herein. One of ordinary skill in the art would not look to the teachings of Nakano, Miyatake, and/or Enami, as the Examiner contends, because none of these prior art references provide a teaching, suggestion or motivation to first formulate an electroconductive silicone rubber composition *and* then further optimize the specific amount of surface active agent in the electroconductive silicone rubber composition in the manner that the Examiner is asserting. In addition, even if one of ordinary skill in the art were to have looked to the teachings of the prior art, one would in no way arrive at the present invention, as claimed. Specifically, as alluded to in paragraph 8 of the Declaration, one of ordinary skill in the art would not have formulated the electroconductive silicone rubber composition of the present invention, as claimed. Instead, one would have to formulated something quite different.

As noted in paragraph 7 of the Declaration, and in the Background section of the subject application (see paragraph [002]), the Applicants were aware of previous electrically conductive

silicone rubber compositions including silicone rubber powders, including the electrically conductive silicone rubber composition of Nakano. However, as expressly described in the Background section, spherical silicone rubber particles prepared as taught in Nakano are **problematic**, specifically, "the viscosity of the electrically conductive silicone rubber compositions to which they are added increases" (emphasis added). Further, "attempting to produce electrically conductive silicone rubber with low permanent compression set by adding a large amount of spherical silicone rubber filler causes a marked increase in viscosity of the result electrically conductive silicone rubber composition, which renders preparation of a homogeneous composition impossible" (emphasis added).

As described in paragraphs 4 and 5 of the Declaration, and in the instant specification, component "(E) is characterized by containing not more than 0.3 weight% of surface active agent" (see paragraph [0015]; emphasis added). Specifically, the wt% content of the surface active agent affects viscosity of the electrically conductive silicone rubber composition. Further, with reference to the examples of the subject application, it is shown that having higher than 0.3 wt% of a surface active agent, e.g. 0.5 wt% (see Reference Example 1), leads to marked increases in viscosity, such that homogenous compositions could not be prepared. *However*, surprisingly, using 0.3 wt% or less of a surface active agent, e.g. 0.1 wt% (see Reference Example 2, i.e., an Inventive Example), leads to little to no increase in viscosity of the compositions prepared (see paragraphs [0030] and [0037]). As shown through the examples in the subject application, conventional methods of preparing the electrically conductive silicone rubber composition using a surface active agent, such as those taught by Nakano, result in

surface active agent contents that are in **excess** of those as claimed in the present invention (see again Reference Example 1), and additional steps are generally required to lower the surface active agent content to those levels as claimed for the present invention (see again Reference Example 2).

While the present invention is not limited with regard to particle size of component (E), the teachings within Nakano focus on specific particle sizes, and this focus is significant as to what Nakano can reasonably be argued to represent relative to the invention claimed in the subject application. Specifically, as described in paragraphs 9 and 10 of the Declaration, and as taught by Nakano, Japanese Patent Kokai 62-257939 (the '939 patent; which is cited as one method for preparing Nakano's spherical particles) uses surface active agents in a manner to form emulsion particles having a particle diameter not exceeding 20 μm (see C4:L10-11). In this particular manner, **increasing** the amount of surface active agent **decreases** particle diameter of the emulsion particles, as commented upon in the Declaration. As described by Nakano, when the average particle diameter of the spherical particles is too large, the resulting silicone rubber composition has poor workability during molding (see C4:L15-29).

Accordingly, and as reinforced in paragraph 10 of the Declaration, one of ordinary skill in the art would therefore choose to decrease particle diameter of the emulsion particles of the '939 patent (and therefore Nakano), by **increasing** the amount of surface active agent employed, in order to increase workability during molding of the resulting silicone rubber composition. As such, the content of the surface active agent would be greater than 0.5 wt%. The Examiner is reminded, that "**[i]f [the] proposed modification would render the prior art**

invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." [5] (emphasis added). Said another way, if one of ordinary skill in the art were to analyze the disclosure of Nakano with regard to achieving desirable particle sizes based on employing various amounts of surface active agent, the teaching of Nakano goes directly against the Examiner's optimization assertion of optimizing (or modifying) to lower wt% contents of surface active agent.

Further, as detailed in paragraph 11 of the Declaration, it can be concluded that greater than 0.3 wt% of surface active agent content is present in the silicone rubber particles disclosed by Nakano, and thus, a teaching of a surface active agent content of greater than 0 but not more than 0.3 wt% is not necessarily present in the teachings of Nakano.

To elaborate upon this, first, Nakano does not teach a specific amount of surface agent employed to form its silicone rubber, and more importantly, makes no mention whatsoever of an end surface active agent content in its silicone rubber. Second, various amounts of a surface active agent, which can eventually yield a surface active agent content greater than 0.3 wt%, can be used to make the silicone powder of Nakano, such as described above with regard to the '939 patent. Third, there is no teaching of any steps that would in fact reduce the surface active agent content of the silicone rubber, and more importantly there is no teaching or even a suggestion of desirability to reduce the content of the surface active agent in the silicone powder. Rather, Nakano only teaches a step of spray-drying the emulsion to obtain the silicone rubber from the emulsion. *Conversely*, as described in the subject application, the spherical rubber particles are

[5] See MPEP §2143.01 V. citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

generally post-treated, such as by filtering and rinsing the spherical rubber particles with water, to obtain a surface active agent content of greater than 0 but not more than 0.3 wt% (see Reference Example 2 and paragraph [0016] of the subject application). Finally, the teachings of Nakano would lead one of ordinary skill in the art to *increase* the amount of surface active agent, if employed, to decrease particle size of the emulsion (silicone) particles.

Further, while not necessary in view of the arguments above, Nakano is also silent about providing an electrically conductive silicone rubber composition containing a metal based electrically conductive filler and spherical silicone rubber particles, capable of forming a highly electrically conductive silicone rubber having low hardness and low permanent compression set and exhibiting little thickening by controlling surface active agent content in the spherical silicone rubber particles (see, e.g. paragraph [001] of the subject application). Yet further, Nakano is silent with regard to viscosity of its conductive silicone rubber composition. In view of the foregoing, and especially in view of the Declaration, the Applicants respectfully submit that claim 1 is both novel and non-obvious, in view of the disclosure, teachings, and suggestions of the prior art.

Miyatake

In the alternative, the Examiner relies on Miyatake, in combination with Nakano and/or Enami, to disclose explicit contents of surface active agents for silicone rubber emulsions. *However*, as described in detail below, Miyatake has many of the same deficiencies as described above for Nakano. Specifically, as alluded to in paragraph 8 of the Declaration, even if one of ordinary skill in the art were to combine the teachings of these prior art references to formulate

an electroconductive silicone rubber composition, the electroconductive silicone rubber compositions **would not** necessarily possess the characteristics of the present invention, as claimed. Instead, at a minimum, the teachings and suggestions of the prior art would direct one of ordinary skill in the art to formulate compositions employing greater amounts of surface active agent contents, relative to the present invention as claimed in the subject application. In addition, the Examiner is reminded that Miyatake **must be considered in its entirety**[6], especially with regard to total amounts of emulsifier used by Miyatake.

Referring now to Miyatake, Miyatake discloses a silicone rubber particle-containing aqueous emulsion which comprises polymer particles comprising (A) 0.1 to 45% by weight of a vinyl homopolymer or copolymer and (B) 55 to 99.9% by weight of a silicone rubber, wherein the polymer particles have a number average particle size of 0.008 to **0.1 μm**. (see Abstract; emphasis added). The vinyl homopolymer or copolymer (A) is formed from an emulsion polymerization of a vinyl monomer (a) (see C10:L31-5). "The polymerization conversion in the preparation of the vinyl homo- or copolymer (A) from the vinyl monomer (a) is usually at least 95% by weight, and the polymerization conversion in the polymerization of the silicone rubber-forming component (b) in the presence of the vinyl homo- or copolymer (A) from the vinyl monomer (a) is usually at least 80% by weight. Therefore, in order to control the amount of emulsifiers included in the final emulsion to 10 parts by weight or less per 100 parts by weight of the silicone rubber (B), it is preferable to use the emulsifiers so that the total amount of the

[6] See MPEP §2142.02; "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)".

emulsifiers used, namely total amount of the emulsifiers (α) and (β), **is at most 10 parts by weight**, especially at most 8 parts by weight, more especially at most 6 parts by weight, per 100 parts by weight of the total of (amount of vinyl monomer (a)) x 95% by weight and (amount of silicone rubber-forming component (b)) x 80% by weight. The lower limit of the total amount of the emulsifiers is **0.6 part by weight** from the viewpoints of controlling the number average particle size of the silicone rubber emulsion to at most 0.1 μm and maintaining the emulsion **stable.**" (see C13:L42-61; emphasis added).

While the present invention is not limited with regard to particle size of component (E), the teachings within Miyatake focus on specific particle sizes, and this focus is significant as to what Miyatake can reasonably be argued to represent relative to the invention claimed in the subject application. Specifically, much like Nakano, Miyatake teaches one of ordinary skill in the art that if content of the emulsifier (i.e., surfactant) is decreased too low, then particle size will be negatively impacted. As such, one of ordinary skill in the art would choose to increase the emulsifier content, rather than decrease the emulsifier content, in order to decrease particle size of the silicone rubber emulsion. Said another way, if one of ordinary skill in the art were to analyze the disclosure of Miyatake with regard to achieving desirable polymer particle sizes based on employing various amounts of the emulsifier, the teaching of Miyatake goes directly against the Examiner's optimization assertion of optimizing (or modifying) to lower wt% contents of surface active agent. In addition, the total amount of the emulsifiers, *combined*, is greater than the amount of surface active agent as claimed for the subject application. As such,

there is no overlap of ranges, and therefore, a *prima facie* case of obvious has not been properly established by the Examiner.

This concept of maintaining and employing higher amounts of the emulsifier is further reinforced by Miyatake. "The amount of an emulsifier included in the aqueous silicone rubber particle-containing emulsion of the present invention is at most 10 parts by weight, preferably from 0.5 to 8 parts by weight, more preferably from 1.5 to 6 parts by weight, per 100 parts by weight of the silicone rubber (B). If the amount of the emulsifier is more than 10 parts by weight, the appearance of resins is deteriorated, for example, when the emulsion is used as an impact modifier or slipping agent for thermoplastic resins. If the amount of the emulsifier is less than **0.5 part by weight**, the stability of the emulsion tends to be decreased." (see C9:L34-44; emphasis added). As such, one of ordinary skill in the art would choose to increase the emulsifier content, rather than decrease the emulsifier content, in order to increase stability of the emulsion. Said another way, if one of ordinary skill in the art were to analyze the disclosure of Miyatake with regard to achieving increased stability of the emulsion based on employing various amounts of the emulsifier, the teaching of Miyatake goes directly against the Examiner's optimization assertion of optimizing (or modifying) to lower wt% contents of surface active agent. In addition, as stated above, the total amount of the emulsifiers, *combined*, is greater than the amount of surface active agent as claimed for the subject application. As such, there is no overlap of ranges, and therefore, a *prima facie* case of obvious has not been properly established by the Examiner.

Further, Miyatake does not suggest the further use of its silicone rubber particles in an electrically conductive silicone rubber composition. Yet further, as described above, an emulsifier is disclosed by Miyatake for preparing the silicone rubber particles. However, there is absolutely no recognition with respect to the silicone rubber particles having greater than 0 but not more than 0.3 wt% of an emulsifier (i.e., surface active agent), as is recognized and claimed in the present invention for affecting viscosity of the electrically conductive silicone rubber composition. To the contrary, Miyatake teaches and motivates one of ordinary skill in the art to employ greater amounts of the emulsifier, up to 10 parts by weight in fact, which is approximately **thirty three (33) times greater** than the highest amount of surface active agent content employed and claimed in the subject application. Miyatake also teaches and suggests using no less than 0.5 part by weight emulsifier. As like already established above for Nakano, the broad disclosure of Miyatake's emulsifier amounts does not appreciate the new and unexpected results of employing no greater than 0.3 wt% surface active agent content. Similar to Nakano, Miyatake's teaching of 0.5 part by weight emulsifier is similar to the Reference Example of the subject application. As such, the aforementioned advantages of the amount of surface active agent for component (E), as claimed, can be appreciated when compared against the broad teachings of Miyatake. In view of the foregoing, and especially in view of the Declaration, the Applicants respectfully submit that claim 1 is both novel and non-obvious, in view of the disclosure, teachings, and suggestions of the prior art.

Enami

In the alternative, the Examiner relies on Enami in combination with Nakano, and in combination with Nakano and Miyatake. However, as described above, Nakano and Miyatake suffer from deficiencies. Specifically, as alluded to in paragraph 8 of the Declaration, even if one of ordinary skill in the art were to combine the teachings of these prior art references to formulate an electroconductive silicone rubber composition, the electroconductive silicone rubber compositions **would not** necessarily possess the characteristics of the present invention, as claimed. Instead, at a minimum, the teachings and suggestions of the prior art would direct one of ordinary skill in the art to formulate compositions employing **greater** amounts of surface active agent contents, relative to the present invention as claimed in the subject application.

As the Examiner has expressly recognized in the instant Office Action, Enami, like Nakano, fails to teach the content of surface active agent in an amount of greater than 0 but not more than 0.3 wt%. *However*, the Examiner then asserts that "it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have incorporated the spherical silicone elastomer particle of Nakano in the thermally conductive silicone rubber composition of Enami…" The Examiner also asserts that it would have been obvious to modify Nakano as previously described above. Alternatively, the Examiner asserts that it would have been obvious to modify Nakano as suggested by Miyatake. **Again, the Applicants must respectfully disagree with Examiner's assertions for the reasons already described in detail above.**

First, Enami fails to teach or suggest that silicone rubber particles can be used in a thermally conductive silicone rubber composition. Further, Enami is silent about providing an electrically conductive silicone rubber composition containing a metal based conductive filler and spherical silicone rubber particles, which has greater than 0 but not more than 0.3 wt% of the surface active agent, capable of forming a highly electrically conductive silicone rubber of low hardness and low permanent compression set and exhibiting little thickening due to the addition of the silicone rubber powder. More importantly, as described in great detail above, the teachings of Nakano and Miyatake would in no way direct one of ordinary skill in the art to modify their respective compositions in the manner the Examiner is asserting. To the contrary, the collective teachings of Nakano and Miyatake go directly against the Examiner's modification/optimization argument. In view of the foregoing, and especially in view of the Declaration, the Applicants respectfully submit that claim 1 is both novel and non-obvious, and that the Examiner's §103 rejections are overcome. Specifically, *even if* one assumes that the Examiner has established a *prima facie* case of obviousness with regard to the present invention, the *prima facie* case of obviousness is rebutted by evidence showing that the teachings of the prior art, either alone or in combination, do not possess the characteristics of the present invention, as claimed.

Conclusion

In view of the foregoing, the Applicants respectfully submit that claim 1 is both novel and non-obvious, in view of the disclosure, teachings, and suggestions of the prior art such that claim 1, as well as the claims that depend therefrom, are in condition for allowance. If

any additional fees are necessary to respond to the outstanding Office Action, you are hereby authorized to charge such fees to Deposit Account No. 08-2789 in the name of Howard & Howard Attorneys, P.C.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS PLLC

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Date

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